

## **2013 Chicot Lake Aquatic Vegetation Control Plan**

### **LDWF, Inland Fisheries**

In 2012, foliar herbicide applications were made on nuisance plants such as water hyacinth, American lotus, alligator weed, cut grass, pennywort, primrose, duckweed and common salvinia in Chicot Lake. A total of 335 gallons were applied to 742 acres. To control water hyacinth, alligator weed, primrose and American lotus, 2,4-D was applied at a rate of 0.5 gallons per acre. Diquat and glyphosate were applied at 0.75 gallons per acre to control common salvinia and duckweed.

The systemic herbicides Sonar PR and Sonar Q were applied early in the spring of 2012. Two hundred forty pounds each of Sonar PR and Sonar Q were applied in April. A follow-up application of Sonar PR (120 pounds) and Sonar Q (80 pounds) took place 4 weeks after the initial treatment to keep the herbicide concentration at an effective level. The area targeted for treatment was approximately 235 acres located on the north end of the lake between the north landing and the spillway.

A 2 foot drawdown in the fall of 2012 has helped to retard aquatic plant growth in Chicot Lake. The control structure was opened on September 10, 2012 to allow dewatering at a rate of 3 inches per day. The control structure was closed on September 17<sup>th</sup> 2012 when water levels reached two feet below pool stage.

### **Nuisance Aquatic Vegetation Problems:**

Plant growth projections for summer 2013:

Hydrilla - up to 200 acres on the north end of the lake

Other submerged vegetation (coontail, fanwort and naiad) – 450 acres

Water hyacinth, pennywort & American lotus - up to 100 acres located throughout the lake

Duckweed & common salvinia - up to 200 acres located on the south end of the lake

### **Proposed Control Measures:**

An integrated management plan has been developed to control the spread of submergent vegetation, primarily Hydrilla, in Chicot Lake. The advantage of integrated management is the ability to achieve a combined benefit from several control methods and not be completely dependent on the success of any one approach. Continued herbicide applications will be conducted by LDWF. The systemic herbicide, Sonar, was applied in early spring in 2012 to kill germinating tubers. Contact herbicides will be used to control floating and emergent plants

throughout the lake as needed. Other recommended action will include 3 foot drawdowns annually to control submerged vegetation. Triploid grass carp (TGC) will be introduced in early 2013. LDWF personnel will continue to perform type map surveys and sampling to monitor aquatic vegetation and will update recommendations as necessary.

### *Chemical Control*

Foliar herbicide applications on Chicot Lake will be conducted as needed by LDWF spray crews in 2013. Herbicides applied will be 2,4-D and glyphosate (Aquamaster) at 0.5 and 0.75 gallons per acre, respectively, on plants such as water hyacinth, American lotus and pennywort. Diquat dibromide (Tribune) at 0.75 gallons per acre will be used in conjunction with Red River 90 (non-ionic surfactant) to control plants such as common salvinia and duckweed.

### *Physical Control*

Water level fluctuation is an important tool for lake management. Drawdowns mimic natural low water periods of the fall and can provide many of the same benefits including aquatic vegetation control and fish population management. In addition, exposure to air is critical to decomposition of organic materials on the lake bottom. The re-flooded habitat is an improved and more productive spawning substrate for nesting fish. Cooler water temperatures in the fall also reduce potential for fish kills. Therefore, annual fall drawdowns three feet below pool stage are recommended for Chicot Lake. The control structure will be opened soon after Labor Day to allow de-watering at a rate of 3-4 inches per day. The target water level is to be maintained until early January of the following year. The lake will remain open for recreational activities.

### *Biological Control*

Hydrilla was first discovered in Chicot Lake in 1996. Since that time herbicide applications and drawdowns have been conducted to control the spread of the invasive submerged plant. As an additional control measure, a total of 450 TGC will be stocked in the winter of 2012 - 2013. Triploid grass carp are sterile and are effective in the control of Hydrilla when stocked in appropriate numbers and contained within the waterbody. A stocking rate of 3 fish per vegetated acre has been selected. To reduce potential for loss through predation, the minimum size for the stocked TGC will be 12 inches in length. Annual sampling will be conducted to determine the effects of the TGC stocking. If necessary after a three year period, the introduction of additional TGC will be considered.

## Chicot Vegetation Type Map

Chicot Lake was surveyed on September 6, 2012 for the presence/abundance of aquatic vegetation.

Water hyacinth (*Eichornia crassipes*) was the predominant species of floating vegetation. Other floating plants observed were duckweed (*Lemna spp.*) and common salvinia (*Salvinia minima*). Floating vegetation was not the main problem, although small pockets and fringes were scattered throughout the lake and within some coves. These small infestations are treated regularly throughout the growing season by District 6 spray crews.

A severe infestation of submerged and emergent aquatic vegetation was observed in the northern part of the lake adjacent to the boat launch (~130 acres). This area received a Sonar treatment in the spring of 2012. The predominant species of submerged aquatic vegetation (SAV) were coontail (*Ceratophyllum demersum*), fanwort (*Cabomba caroliniana*), southern naiad (*Najas guadalupensis*), and hydrilla (*Hydrilla verticillata*). The predominant emergent species were American lotus (*Nelumbo lutea*), alligatorweed (*Alternanthera philoxeroides*), and white water lily (*Nymphaea odorata*).

\*Hydrilla was observed in trace amounts. The bulk of SAV was composed of native species.

Walker Branch and Turtle Island were relatively clear of nuisance aquatic vegetation.

Several coves as well as the very north and south of the lake had moderate-to-severe infestations of a variety of nuisance aquatic vegetation. However, these areas are densely forested, shallow, and considered inaccessible.

An estimated total of 150 acres of nuisance aquatic vegetation was observed. The estimated total of accessible acreage is 1,300 acres. An estimated 12% of Chicot Lake is infested with nuisance aquatic vegetation (mostly SAV).

\*NO GIANT SALVINIA WAS OBSERVED.

## **Type Map September 21, 2011**

Chicot lake water level was 18 inches below pool and the bridge on the spillway road was being re-surfaced. Chicot Lake was de-watered 7 feet from pool the first Tuesday after Labor Day, 2010. The lake has remained below pool since that day due to a serious drought in that area during 2011. No fish kills were observed or reported during the drawdown procedure. The lake was de-watered in order to facilitate the repair of pilings of the Walker Branch Bridge which crosses one of the lake's numerous coves. Chicot refilled from rainfall to a safe level for fishing and power boat use by the end of March 2011. Much of the lake bottom was exposed from late September 2010 until mid-February 2011 with only the main deeper channel remaining wet with 8 to 10 feet of water. The channel runs from just south of the south end boat launch to the lake spillway and continues to the north end boat launch. This channel provided suitable fish habitat during the bridge repair.

Vegetation observed in the lake was mostly water hyacinth (*Eichhornia crassipes*) with the greatest amount existing from the middle to the northern end of the lake. Severe amounts of water hyacinth were seen in the area surrounding the north boat launch as well as adjacent to the main channel near the mid-section of the lake. There was a light to moderate fringe of water hyacinth along the shore of the lake starting in the middle section extending into turtle island and conservation cove. A light fringe of water hyacinth could be found in Walker's branch and a heavy fringe was seen along Pine Island. This heavy fringe of water hyacinth in the Pine island area was first noticed during April of 2011 while tagging bass for the Cabela's fishing tournament. At this time, only small patches of water hyacinth were observed elsewhere in the lake.

Light to moderate amounts of water hyacinth were observed in the southern end of the lake on September 21, 2011. Heavy amounts of water primrose (*Ludwigia* spp.) were observed on the southern end of the lake. A light fringe of water hyacinth could be seen in the back of coves located on the southern end of the lake.

A heavy infestation of American lotus (*Nelumbo lutea*) and white water lily (*Nymphaea odorata*) was observed on the shallow flats adjacent to the north boat launch. There was a heavy amount of filamentous algae (*Spirogyra*) in this area as well. Little to no Hydrilla (*Hydrilla verticillata*) was found in this area with no Hydrilla being found in conservation cove or along the spoil bank canal banks. This area had received a treatment of Sonar (fluridone) herbicide during the spring of 2010. Submerged vegetation was found in the end of the conservation cove, southern naiad (*Najas quadalupensis*) in light amounts. A very light amount of duckweed (*Lemna* spp.) and common salvinia (*Salvinia minima*) was seen in the lake. NO GIANT SALVINIA OBSERVED.

Below are several of the measured lake water parameters of Chicot. Data was collected on the 23<sup>rd</sup> of September, 2011

Date	SpCond	Salinity	Depth	pH	pHmV	Turbidity+	Chlorophyll	d.o. percent	d.o. mg/l	Station
9/23/11	25.69	0.068	0.03	4.816	8.09	-72.2	2.0	11.9	44.50	3.63 North flat
9/23/11	25.73	0.067	0.03	0.484	7.64	-47.1	5.1	12.9	43.20	3.52
9/23/11	24.38	0.103	0.05	3.762	7.10	-17.1	1.4	11.5	8.30	0.69 South end
9/23/11	24.94	0.098	0.04	0.202	6.98	-10.4	0.4	16.5	37.00	3.06
9/23/11	26.40	0.075	0.03	9.632	6.99	-10.6	65.3	27.2	6.50	0.53 South boat launch
9/23/11	26.75	0.071	0.03	0.273	6.84	-2.5	2.6	20.1	60.00	4.80

